

SAFETY DATA SHEET

1. IDENTIFICATION

Product Name: EBECRYL® 4820 radiation curing resins
Synonyms: None
Product Description: urethane acrylate, UV-curable
Molecular Formula: Mixture
Molecular Weight: Mixture
Intended/Recommended Use: Binder, Coatings & Inks
Uses advised against: Reason: sensitizing properties. This product should not be used in any application where unreacted liquid product is intended to come in direct contact with skin or nails.

Allnex USA Inc., 9005 Westside Parkway, Alpharetta, Georgia 30009, USA

For Product and all Non-Emergency Information call your local Allnex contact point or contact us at <http://www.allnex.com/contact>

EMERGENCY PHONE (24 hours/day) - For emergency only involving spill, leak, fire, exposure or accident call:

+1-866-928-0789 (toll free) or +1-215-207-0061 (Carechem 24 - Allnex29003-NCEC)

See Section 16 for Emergency phone numbers for other regions.

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2. HAZARDS IDENTIFICATION

GHS Classification

Reproductive Toxicant Hazard Category 1B
Skin Corrosion / Irritation Hazard Category 2
Serious Eye Damage / Eye Irritation Hazard Category 2A
Skin Sensitizer Hazard Category 1B
Aquatic Environment Acute Hazard Category 2
Aquatic Environment Chronic Hazard Category 3

LABEL ELEMENTS



Signal Word
DANGER

Hazard Statements
May damage fertility or the unborn child

Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction
Toxic to aquatic life
Harmful to aquatic life with long lasting effects

Precautionary Statements

Obtain special instructions before use.
Wear protective gloves/protective clothing/eye protection/face protection.
Wash face, hands and any exposed skin thoroughly after handling.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Contaminated work clothing should not be allowed out of the workplace.
Avoid release to the environment.
IF exposed or concerned: Get medical advice/attention.
IF ON SKIN: Wash with plenty of soap and water.
Specific treatment (see supplemental first aid instructions on this label).
Take off contaminated clothing and wash it before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
If eye irritation persists: Get medical advice/attention.
If skin irritation or rash occurs: Get medical advice/attention.
Store locked up.
Dispose of contents/container in accordance with local and national regulations.

Hazards Not Otherwise Classified (HNOC), Other Hazards

Polymerization may occur from excessive heat, contamination or exposure to direct sunlight.

3. COMPOSITION/INFORMATION ON INGREDIENTS**HAZARDOUS INGREDIENTS**

Component / CAS No.	%	GHS Classification	Carcinogen
Hexamethylene diacrylate 13048-33-4	30 - 40	Skin Irrit. 2 (H315) Eye Irrit. 2A (H319) Skin Sens. 1B (H317) Aquatic Acute 2 (H401) Aquatic Chronic 3 (H412)	-
Dibutyltin dilaurate 77-58-7	< 0.15	Muta. 2 (H341) Repr. 1B (H360FD) STOT RE 1 (H372) STOT Single 1 (H370) Skin Corr. 1C (H314) Eye Dam. 1 (H318) Skin Sens. 1B (H317) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	-
Acrylated resin -	60 - 70	Skin Irrit. 2 (H315) Eye Irrit. 2A (H319)	-

The specific chemical identity and/or exact percentage of composition for one or more ingredients has been withheld as a trade secret.

Additional GHS classification or other information may be included in this section but has not been adopted by OSHA. See Section 16 for full text of H phrases.

4. FIRST AID MEASURES

First-aid Measures

Inhalation:

Remove to fresh air. If breathing is difficult, give oxygen. Obtain medical advice if there are persistent symptoms.

Skin Contact:

Wash immediately with plenty of water and soap. Remove contaminated clothing and shoes without delay. Obtain medical attention. Do not reuse contaminated clothing without laundering. Destroy or thoroughly clean shoes before reuse.

Eye Contact:

Rinse immediately with plenty of water for at least 15 minutes. Obtain medical advice if there are persistent symptoms.

Ingestion:

Material is not expected to be harmful by ingestion. No specific first aid measures are required.

Most Important Symptoms and Effects, Acute and Delayed

None known.

Immediate Medical Attention and Special Treatment

In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

Notes To Physician:

No specific measures have been identified.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media:

Use water spray or fog, carbon dioxide or dry chemical.

Unsuitable Extinguishing Media:

full water jet.

Protective Equipment:

Firefighters, and others exposed, wear self-contained breathing apparatus. Wear full firefighting protective clothing. See SDS Section 8 (Exposure Controls/Personal Protection).

Special Hazards:

Keep containers cool by spraying with water if exposed to fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Where exposure level is not known, wear approved, positive pressure, self-contained respirator. Where exposure level is known, wear approved respirator suitable for level of exposure. In addition to the protective clothing/equipment in Section 8 (Exposure Controls/Personal Protection), wear impermeable boots.

Methods For Cleaning Up:

Cover spills with some inert absorbent material; sweep up and place in a waste disposal container. Flush spill area with water.

Environmental Precautions:

Avoid release to the environment.

References to other sections:

See Sections 7, 8 and 13 for additional information.

7. HANDLING AND STORAGE

HANDLING

Precautions: Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves and eye/face protection.

Special Handling Statements: Provide good ventilation of working area (local exhaust ventilation if necessary). Avoid excessive heat, contamination or exposure to direct sunlight to prevent polymerization.

STORAGE

Store in a cool, dry, well ventilated place and keep container tightly closed. Keep away from heat sources and direct sunlight.

Storage Temperature: Store at 4 - 40 °C 39.2 - 104 °F

Reason: Quality.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures:

Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure when spraying or curing at elevated temperatures.

Respiratory Protection:

For operations where inhalation exposure can occur use an approved respirator. Recommendations are listed below. Other protective respiratory equipment may be used based on user's own risk assessment. Recommended respirators include those certified by NIOSH.

Recommended:

Full Face Mask with organic vapor cartridge, Type A filter (BP >65°C)

Where inhalation exposure is reasonably likely, use a NIOSH-Certified respirator with an APF of at least 50 for non-spray applied operations, or an APF 1000 respirator for spray applied operations.

Eye Protection:

Wear eye/face protection such as chemical splash proof goggles or face shield. Eyewash equipment and safety shower should be provided in areas of potential exposure.

Skin Protection:

Avoid skin contact. Wear impermeable gloves and suitable protective clothing. Barrier creams may be used in conjunction with the gloves to provide additional skin protection.

Hand Protection:

Wear protective gloves. Recommendations are listed below. Other protective materials may be used based on user's own risk assessment. Barrier creams may help to protect the exposed areas of the skin, they should however not be applied once exposure has occurred. Replace gloves immediately when torn or any change in appearance (dimension, color, flexibility etc.) is noticed.

Gloves for short term exposure/splash protection - non exhaustive list:

Laminated multilayer gloves, break through time: > 60 min

Nitrile rubber (NBR), thickness: > 0.56 mm, break through time: < 60 min

The chemical resistance depends on the type of product and amount of product on the glove. Therefore gloves need to be changed when in contact with chemicals.

Not suitable gloves - non exhaustive list:

Latex gloves

Due to many conditions (e.g. temperature, abrasion) the practical usage of a chemical protective glove in practice may be much shorter than the permeation time determined through testing.

Additional Advice:

Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use. Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water.

Exposure Limit(s)**77-58-7 Dibutyltin dilaurate**

OSHA (PEL):	0.1 mg/m ³ (TWA)
ACGIH (TLV):	0.2 mg/m ³ Sn (STEL) (skin)
	0.1 mg/m ³ Sn (TWA)
Other Value:	Not established

Biological Exposure Limit(s)

No values have been established.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	colorless
Appearance:	liquid
Odor:	perceptible ester
Boiling Point:	> 100 °C
Melting Point:	Not available
Vapor Pressure:	< 0.133 hPa @ 20 °C
Specific Gravity/Density:	1.092 g/cm ³ @ 20 °C
Vapor Density:	Not available
Percent Volatile (% by wt.):	< 0.5 %
pH:	Not available
Saturation In Air (% By Vol.):	Not available
Evaporation Rate:	Not available
Solubility In Water:	Insoluble
Volatile Organic Content:	Not available
Flash Point:	> 100 °C DIN EN ISO 2719
Flammable Limits (% By Vol):	Not applicable
Autoignition Temperature:	Not available
Decomposition Temperature:	200 °C
Partition coefficient (n-octanol/water):	Not available
Odor Threshold:	Not available
Viscosity (Kinematic):	Not applicable
Viscosity (Dynamic):	3300 mPa.s @ 25 °C
Explosive Properties:	None.
Oxidizing Properties:	No

10. STABILITY AND REACTIVITY

Reactivity: No information available

Stability: Stable.

Conditions To Avoid:	Avoid contamination with metallic impurities and peroxides. Avoid direct exposure to sunlight. All sources of ignition. Elevated temperatures. Loss of dissolved air. Loss of polymerization inhibitor. Storage > 100 °F.
Polymerization:	May occur
Conditions To Avoid:	Uncontrolled polymerization may cause rapid evolution of heat and increase in pressure that could result in violent rupture of sealed storage vessels or containers. Hazardous polymerization can occur when exposed to direct sunlight. Hazardous exothermic polymerization can occur when heated. Avoid contact with vinyl polymerization initiators. Excessive heat. Avoid contact with isocyanates and oxidizing agents. Avoid contamination with rust, oxidizing and reducing agents, vinyl polymerization initiators, acids, bases, and materials that chelate or precipitate copper. Avoid contact with free radical initiators. Avoid contact with acids, free radical initiations, sunlight or ultraviolet light.
Materials To Avoid:	Peroxides, metallic compounds, strong oxidizing agents. Strong oxidizing agents and strong bases. Bases Avoid prolonged contact with light. Copper, copper alloys, carbon steel, iron and rust.
Hazardous Decomposition Products:	oxides of carbon hydrocarbons

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Skin, Eyes, Oral.

Acute toxicity - oral: Not Classified - Based on available data and/or professional judgment, the classification criteria are not met.

Acute toxicity - dermal: Not Classified - Based on available data and/or professional judgment, the classification criteria are not met.

Acute toxicity - inhalation: Not Classified - Based on available data and/or professional judgment, the classification criteria are not met.

Skin corrosion / irritation: Causes skin irritation

Serious eye damage / eye irritation: Causes serious eye irritation

Respiratory sensitization: Not Classified - Based on available data and/or professional judgment, the classification criteria are not met.

Skin sensitization: May cause an allergic skin reaction

Carcinogenicity: Not Classified - Based on available data and/or professional judgment, the classification criteria are not met.

Germ cell mutagenicity: Not Classified - Based on available data and/or professional judgment, the classification criteria are not met.

Reproductive toxicity: May damage fertility or the unborn child

Specific target organ toxicity (STOT) - single exposure: Not Classified. - Based on available data and/or professional judgment, the classification criteria are not met.

Specific target organ toxicity (STOT) - repeated exposure: Not Classified. - Based on available data and/or professional judgment, the classification criteria are not met.

Aspiration hazard: Not Classified - Based on available data and/or professional judgment, the classification criteria are not met.

PRODUCT TOXICITY INFORMATION

ACUTE TOXICITY DATA

oral	rat	Acute LD50	> 2000 mg/kg
dermal	rabbit	Acute LD50	> 2000 mg/kg
inhalation	rat	Acute LC50 4 hr	> 5 mg/l (Dust/Mist)

LOCAL EFFECTS ON SKIN AND EYE

Acute Irritation	Skin	Irritating
Acute Irritation	eye	Irritating

ALLERGIC SENSITIZATION

Sensitization	Skin	Sensitizing
Sensitization	respiratory	No data

GENOTOXICITY

Assays for Gene Mutations

Ames Salmonella Assay	No data
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OTHER INFORMATION

The product toxicity information above has been estimated.

The toxicological properties of this material have not been fully determined.

Prolonged or repeated contact with skin or mucous membrane may result in irritation symptoms such as redness, blistering, dermatitis, etc.

The inhalation of airborne droplets or aerosols may cause irritation of the respiratory tract.

11. TOXICOLOGICAL INFORMATION

HAZARDOUS INGREDIENT TOXICITY DATA

Hexamethylene diacrylate, CAS 13048-33-4, has oral (rat) and dermal (rabbit) LD50 values of >5000 mg/kg and 3600 mg/kg, respectively. This material causes moderate skin and eye irritation. Repeated skin contact may cause allergic skin reaction. No evidence of point mutations in the Salmonella bacterial test was observed. Structurally similar acrylate and methacrylate substances showed no evidence of point mutation in the in vitro hprt mutation assay and no evidence of a mutagenic effect was seen when tested in whole animal chromosomal aberration and/or micronucleus assays. In contrast this substance as well as the entire acrylate/methacrylate chemical class produced a consistently positive response when tested in the mouse lymphoma assay and/or other in vitro mammalian cell assays designed to detect clastogenicity. However, the biological relevance of this in vitro response is questioned as these results could not be confirmed in tests on whole mammalian systems. This substance has been shown to cause fetotoxic effects during animal testing only in the presence of maternal toxicity.

Based on literature and actual test data, dibutyltin dilaurate (DBTL) has acute oral LD50 values ranging from less than 2000 to >2000 mg/kg. The acute dermal LD50 (rat) is >2000 mg/kg. Dibutyltin dilaurate (DBTL) may cause severe skin irritation. This substance may cause skin sensitization (allergic skin reactions). Repeated oral administration of DBTL has caused liver damage and death in animals. Neurotoxicity has also been observed in animals after oral exposure. DBTL may impair fertility, may cause harm to the unborn child and is suspected of causing genetic defects. Tumour formation was not observed in a 2-year chronic study conducted with mice and rats with a structural analogue. Organotin compounds are suspected of causing immunosuppressant effects.

The toxicological properties of acrylated resin have not been fully investigated. Direct contact with this material may cause moderate eye and skin irritation.



WARNING: Reproductive Harm – www.P65Warnings.ca.gov

12. ECOLOGICAL INFORMATION

TOXICITY, PERSISTENCE AND DEGRADABILITY, BIOACCUMULATIVE POTENTIAL, MOBILITY IN SOIL, OTHER ADVERSE EFFECTS

Overall Environmental Toxicity: Toxic to aquatic life. Harmful to aquatic life with long lasting effects.

The ecological properties of this material have not been fully investigated.

RESULTS OF PBT AND vPvB ASSESSMENT

Not determined

HAZARDOUS INGREDIENT TOXICITY DATA

Component / CAS No.	Toxicity to Fish
Hexamethylene diacrylate (13048-33-4)	EC50 = 4.6 - 10 mg/L - Leuciscus idus (96hrs)
Dibutyltin dilaurate (77-58-7)	LC50 = 2 mg/L - Oryzias latipes (48h)
Acrylated resin (-)	Not available

Component / CAS No.	Toxicity to Water Flea
Hexamethylene diacrylate (13048-33-4)	EC 50 = 2.6 mg/L - Daphnia magna (48hrs)
Dibutyltin dilaurate (77-58-7)	Not available
Acrylated resin (-)	Not available

Component / CAS No.	Toxicity to Algae
Hexamethylene diacrylate (13048-33-4)	EC 50 = 1.5 mg/L - Desmodesmus subspicatus (72hrs) NOEC = 0.5 mg/L - Desmodesmus subspicatus (72hrs)
Dibutyltin dilaurate (77-58-7)	Not available
Acrylated resin (-)	Not available

Component / CAS No.	Partition coefficient
Hexamethylene diacrylate (13048-33-4)	Not available
Dibutyltin dilaurate (77-58-7)	Not available
Acrylated resin (-)	Not available

13. DISPOSAL CONSIDERATIONS

The information on RCRA waste classification and disposal methodology provided below applies only to the product, as supplied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. Hazardous waste classification under federal regulations (40 CFR Part 261 et seq) is dependent upon whether a material is a RCRA "listed hazardous waste" or has any of the four RCRA "hazardous

waste characteristics." Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA "listed hazardous waste"; information contained in Section 15 of this SDS is not intended to indicate if the product is a "listed hazardous waste." RCRA Hazardous Waste Characteristics: There are four characteristics defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, Reactivity, and Toxicity. To determine Ignitability, see Section 9 of this SDS (flash point). For Corrosivity, see Sections 9 and 14 (pH and DOT corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 3 (composition). Federal regulations are subject to change. State and local requirements, which may differ from or be more stringent than the federal regulations, may also apply to the classification of the material if it is to be disposed. The Company encourages the recycle, recovery and reuse of materials, where permitted, as an alternate to disposal as a waste. The Company recommends that organic materials classified as RCRA hazardous wastes be disposed of by thermal treatment or incineration at EPA approved facilities. The Company has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

14. TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

US DOT

Dangerous Goods? Not applicable/Not regulated

TRANSPORT CANADA

Dangerous Goods? Not applicable/Not regulated

ICAO / IATA

Dangerous Goods? Not applicable/Not regulated

IMO

Dangerous Goods? Not applicable/Not regulated

SPECIAL PRECAUTIONS FOR USER

Protect against external heat sources above +40°C/104°F.

15. REGULATORY INFORMATION

Inventory Information

United States (USA): One or more components of this product are NOT included on the U.S. Toxic Substances Control Act (TSCA) Inventory. The chemical, physical, and toxicological properties of this material have not been fully investigated. Its handling or use may be hazardous, and it must be used under the supervision of technically qualified individuals. Materials not included on the TSCA Inventory may only be used for research and development (R&D) purposes or in other TSCA exempt activities.

This product is manufactured for export only in compliance with Section 12(a) of the Toxic Substances Control Act, 15 U. S. C. 2601 et. seq.

Canada: One or more components of this product are NOT included on the Canadian Domestic Substances List (DSL).

European Economic Area (including EU): When purchased from an Allnex legal entity based in the EEA (EU or

Norway), this product is compliant with the registration of the REACH Regulation (EC) No. 1907/2006 as all its components are either excluded, exempt and/or registered.

Australia: One or more components of this product have NOT yet been included in the Australian Inventory of Chemical Substances (AICS) or assessed by NICNAS.

New Zealand: This product is approved or exempt under the Hazardous Substances and New Organisms (HSNO) Act.

China: One or more components of this product are NOT included on the Chinese (IECSC) inventory. The company has obtained the required notification approvals from the Ministry of Environmental Protection (MEP) as per the "Environmental Administrative Measures for New Chemical Substance" for the component(s) not listed in the Chinese Inventory (IECSC). The product can be imported/manufactured in China ONLY under specific conditions.

Japan: All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese inventory.

Korea: One or more components of this product are NOT included on the Korean (ECL) inventory.

Philippines: One or more polymeric components of this product are NOT included on the Philippine (PICCS) inventory. The unlisted polymer(s) can meet the criteria of polymer exemption. Allnex is willing to support importers in Philippines who need to obtain an official polymer exemption from Environmental Management Bureau (EMB) before importation.

Taiwan: All components of this product are included in the Taiwan chemical substance inventory or are not required to be listed on the Taiwan chemical substance inventory (TCSI).

OTHER ENVIRONMENTAL INFORMATION

The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12(b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.) See Section 13 for information on waste classification and waste disposal of this product.

This product does not contain any components regulated under these sections of the EPA

PRODUCT HAZARD CATEGORY UNDER SECTIONS 311 AND 312 OF EPCRA

Physical Hazards

Not applicable

Health Hazards

Reproductive toxicity

Skin Corrosion or Irritation

Respiratory or Skin Sensitization

Serious eye damage or eye irritation

16. OTHER INFORMATION

NFPA Hazard Rating (National Fire Protection Association)

Health: 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

Fire: 1 - Materials that must be preheated before ignition can occur.

Instability: 1 - Materials that in themselves are normally stable, but that can become unstable at elevated temperatures and pressures.

Date Prepared: 11/08/2018

Date of last significant revision: 11/08/2018

Component - Hazard Statements

Hexamethylene diacrylate

- H315 - Causes skin irritation.
- H317 - May cause an allergic skin reaction.
- H319 - Causes serious eye irritation.
- H401 - Toxic to aquatic life.
- H412 - Harmful to aquatic life with long lasting effects.

Dibutyltin dilaurate

- H314 - Causes severe skin burns and eye damage.
- H317 - May cause an allergic skin reaction.
- H318 - Causes serious eye damage.
- H341 - Suspected of causing genetic defects.
- H360FD - May damage fertility. May damage the unborn child.
- H370 - Causes damage to organs.
- H372 - Causes damage to organs through prolonged or repeated exposure.
- H400 - Very toxic to aquatic life.
- H410 - Very toxic to aquatic life with long lasting effects.

Acrylated resin

- H315 - Causes skin irritation.
- H319 - Causes serious eye irritation.

Emergency phone numbers for other regions

Asia Pacific

Australia: +61 1800 022 037 (Allnex Australia)

China (PRC): +86(0)25 8547 7110 (Jiangsu registration center) / +86(0)532 8388 9090 (NRCC)

India: 000 800 100 7479 (toll free) or +65 3158 1198 (Carechem 24)

Indonesia: 007 803 011 0293 (Carechem 24)

Japan: +81 345 789 341 (Carechem 24)

Korea: +82 2 3479 8401 (Carechem 24)

Malaysia: +60 3 6207 4347 (Carechem 24)

New Zealand: +64 0800 803 002 (Allnex New Zealand)

Philippines: +63 2 231 2149 (Carechem 24)

Taiwan: +886 2 8793 3212 (Carechem 24)

Vietnam: +84 8 4458 2388 (Carechem 24)

All Others: +65 3158 1074 (Carechem 24)

Europe

+44 (0) 1235 239 670 (Carechem 24)

Middle East, Africa

+44 (0) 1235 239 671 (Carechem 24)

Latin America

Brazil: +55-800-707-7022 (toll free) or +55-11-98149-0850 (Suatrans 24)

Chile: +56 2 2582 9336 (Carechem 24)

Mexico and all others: +52-555-004-8763 (Carechem 24)

Prepared By: Product Stewardship & Regulatory Affairs Department, <http://www.allnex.com/contact>

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Trade/Substance ID:	024740-01; N01856; P47724; S208667
Material Type:	Product
Business Group:	Coating Resins

Department:

Coating Resins - Radcure (Specialties)

Status:

Active